

## Pollinator conservation takes off in Montana

As a boy growing up on the family ranch in Ekalaka, Mont., Doug Bonsell was an avid reader of *The Conservationist*. He learned about the newest grazing practices, the importance of healthy soils, and many other topics of interest to an aspiring rancher. One month, the magazine had a story on habitat – what it was, why it was important, and how a landowner might restore or create habitat where none had been before. By the time he reached high school, Doug was making plans for developing habitat on the ranch. His first interest was birds, upland species such as sharp-tailed grouse and Hungarian partridge. Years later, when Doug and his wife, Ronda, purchased the family ranch, his visions of bird habitat became reality. Over many years the couple would plant more than 17,000 trees and shrubs. They planted buffaloberry, chokecherry, cotoneaster, juneberry, sumac, Russian almond, silverberry, currant, honeysuckle, and apricot. They left standing grain and planted cover crops. In number and diversity, the birds flourished.

Around 2012, Doug's interest in habitat found a new focus. He was seeing articles about pollinators, the term applied to a wide range of insects and other animals that carry out one of the world's most important natural functions. As they visit flowering plants in search of nectar or pollen for food, these insects transfer grains of pollen from the anther to the stigma of a flower, fertilizing it, and enabling the plant to produce seeds. Bees, both wild and domesticated, are the most important pollinators of all, but moths, butterflies, wasps, flies, hummingbirds, even some ant and beetle species pollinate as well.

Doug and Ronda visited their local USDA Natural Resource Conservation Service (NRCS) office in 2013 and were excited to learn they might be eligible for a program to cover a portion of the costs of planting a variety of wildflowers and other plants attractive to both wild pollinators and the small colony of honey bees they kept. The 2008 Farm Bill contained provisions to encourage pollinator conservation; the 2014 Farm Bill continued to support pollinators through the Environmental Quality Conservation Program (EQIP) Honey Bee Pollinator Special Initiative, which provides financial assistance to landowners interested in creating, enhancing and managing habitat for honey bees.

For the Bonsells, NRCS conservationists drew up an agreement and provided guidelines for the new habitat. One of Doug's daughters helped NRCS design a site plan, a series of plots laid out along the entrance road to the ranch totaling four acres. The Bridger Plant Materials Center furnished the seed stock while the Bonsells prepared the ground. In the fall of 2017, NRCS furnished a seeder for the planting. Most of the plots contained a single variety of flower; others were planted with a mix of several species. As the plants get established and pollinators begin to appear, NRCS and the Bonsell family will monitor and document the species that visit and the types of flowers they seek out.

For Doug, an innovator and steward, the project is another effort to benefit the natural world that has sustained his life as a rancher. "If you keep taking from the land, you're going to have nothing left. You've got to give back," he says. "The situation with pollinators is like so many others – if everybody does a little, that's a lot."

There's little doubt that both domestic honey bees and their wild counterparts need help, says Stephanie King, a Resource Conservationist with NRCS in Bozeman. In the mid-1990s, honey bee colonies in the US and other countries began to experience dramatic, unexplained declines. "Beekeepers

were losing 35 to 50 percent of their hives annually,” King says. “Worker bees would leave the hive and simply never return.”

By 2006, the phenomenon had a name: Colony Collapse Disorder. While there has never been a single identified cause, several factors are likely involved, including mites, pesticides, and pathogens. “The newer pesticides are very hard on bees and other pollinators,” King says. “Honeybees bring back pesticides to the hives, which can open the door to impacts from diseases or pests.” Wild bee species and other native pollinators have also been affected, she says.

In addition to the impacts of diseases and pesticides, pollinator declines have also been linked to habitat loss, including nectar sources and, particularly for wild bees, suitable nesting and wintering sites. In 2015, a federally-appointed task force on pollinator health called for restoring or creating seven million acres of pollinator habitat nationwide, through public / private partnerships and other government initiatives.

During the first year of its pollinator initiative in Montana, NRCS entered into 40 contracts with landowners on about 1,600 acres in 16 counties. Funding problems hindered enrollment in 2017, but King says the issue of pollinator declines isn’t going away any time soon, and natural resource agencies have vital roles to play.

“It’s really important that Montana, the NRCS and local conservation districts continue to work on this,” she says. “We need to keep at it, keep the public interested in it.” Landowners who have participated in the NRCS program “have come away amazed at what a difference they can make with just a small parcel of land,” she says.

In Western Montana, Lake County resident Susan Gardner grew up on a dairy farm in Lake County. She remembers flood irrigating crops with her father, delighted by the world of clover blossoms and buzzing bees, not to mention the taste of the honeycomb. Years later, a workshop hosted by the Xerces Society provided Susan with hard facts to complement her pastoral experiences with pollinators: their vital importance to food production, their habitat, their numbers and diversity, and especially the problems they face. A pollinator project, Gardner thought, would help. A member of the Lake County Conservation District, she started the process. Inspired and encouraged by the academic work done on pollinator plants by Heidi Fleury, the District’s Conservation Coordinator, Gardiner developed a resolution to be presented to the Montana State Association of Conservation Districts (MACD). In 2017, MACD passed an official statewide resolution making pollinator conservation a priority. Also supported on the national level, projects to promote pollinator habitat have become a conservation focus throughout Montana and the United States.

“My favorite fact is that one out of every three bites of food you take, you can thank a pollinator for producing,” says Heidi Fleury, with the Lake County CD. Thirty-five percent of global crop production is dependent on pollinators. “We’re focused on making sure there’s a large amount of habitat out there for honey bees and other pollinators year-round.”

As of 2017, Fleury said Lake County had tallied at least 100 pollinator plots measuring 2,500 square feet or less. The Lake County CD has offered a seed mix at no cost to landowners who want to participate. Jon and Jean Gravning are Lake County residents whose interest in honey bees and insects in general led them to plant pollinator habitat the year before the local CD was offering seeds, and then to double the size of their garden to 5,000 square feet after they heard about the free seed mix.

Getting a pollinator plot established and thriving involves patience, labor, and a certain amount of trial and error. “We bought our first batch of wildflower seeds commercially, and they did really well the first year, but got choked out by grass the second year,” says Jon. “We did a better job of planting the new batch of seeds. I used a spreader, then raked them into the ground. It’s important to kill off any grass before you plant, and you need to water at least once a week.”

“There’s also a lot of hand weeding that goes with it,” says Jean. “You have to do it to keep the flowers vigorous.”

The Gravnings planted a diversity of species mixed together – purple and white prairie clover, Indian blanketflower, western yarrow, arrowleaf balsamroot, prairie aster, penstemon, basil, native sunflowers, and many others. Some native grasses, such as big bluegrass and slender wheatgrass, are also part of the mix. The key to a successful plot is to offer some kind of food source from spring through fall.

“It’s not easy establishing these plants,” says Ben Montgomery, a supervisory conservationist with the NRCS office in Ronan. “It takes some work and some luck. One of our goals right now is to try a lot of different species and learn which ones do best. Through monitoring we can continue to improve the seed mixes. In five years, the mix probably looks different than it does today.”

The Gravnings see an impressive assortment of insects visiting their plots: bumble bees and other native bees, honey bees, fly species that resemble bees, and a diversity of butterflies, including skippers, swallowtails, and monarchs. They also noticed a lot of praying mantis on their property, possibly drawn to the abundance of insects to hunt.

When people think of pollinators, they most often think of honey bees, which along with the alfalfa leaf-cutting bee are the two most important pollinators in the world for agriculture. Neither species, however, is native to North America. Though they don’t receive as much attention, native bees produced about \$3 billion in pollination services for the nation’s agricultural output in 2009, with honey bees providing \$11.6 billion. And then there’s the critical service that native bees provide to native trees, shrubs, and forbs, 85 percent of which rely on pollinating insects to reproduce.

All it takes is a visit with research scientist Dr. Casey Delphia on the campus of Montana State University (MSU) to appreciate the diversity of Montana’s native bees. The specimen boxes in the lab contain a remarkable assortment of sizes, shapes and colors, from the gargantuan *Bombus* (bumble bee) species to the tiny *Perdita* (mining bee), metallic blue and smaller than a grain of rice. What’s even more remarkable, Delphia says, is what’s *not* known about wild bees in Montana. To date, scientists have identified about 450 species. “We think there could be around 1,000,” she says. “Montana is one of the least-studied states. Colorado has identified 946 species and we expect Montana is home to at least that many.”

The lack of knowledge only compounds the difficulty of understanding population trends. “We really don’t know if they’re declining,” Delphia says. “Since there’s never been a historic sampling, we have no baseline data to work with.”

The growing awareness of pollinators and their habitat needs can only benefit Montana’s wild bees, even if the poster species for the public is a domestic honey bee, or a butterfly, which, Delphia points out, is an “incidental pollinator,” meaning it plays only a minor role in the pollination business compared

to bees. “More habitat will ultimately benefit both managed and wild populations,” she says, “but it’s really important for people to understand the difference between them.”

Doug Crabtree and his wife, Anna Jones-Crabtree, who operate a 7,400-acre organic farm on the plains of northern Hill County, have developed more than 300 acres of pollinator habitat, with more planned on land they just started farming. The intention all along, they say, was to benefit wild bees and other pollinators by establishing native plants in a region where agriculture has reduced natural diversity. The couple incorporated “buffer strips” of native flowers and grasses 20 feet wide into their crop fields. In addition to offering food for pollinators, the strips mitigate wind erosion, capture snow, and provide habitat for other wildlife. The effort started in 2010 when they received an NRCS contract to cost-share the expenses of preparing and seeding their first 34 acres buffers, in a field they were converting to organic production. They’ve tried several seed mixes and continue to monitor and experiment with flower species.

“We continue to find more advantages to integrating nature into the farm,” says Doug. “We’re finding a number of other beneficial insects along with the pollinators, and the strips also enable the layout and management of our five- and seven-year crop rotations.”

Doug and Anna’s operation, Vilicus Farms, is on track to become the first “Bee Better Certified Farm” in Montana in 2018. The certification is a new project of the Xerces Society. Like the Bonsells in Ekalaka, Doug and Anna say their pollinator project mirrors their commitment to stewardship.

“This is about cultivating a relationship with the other living things in your place,” Anna says. “The more diversity we can incorporate into our farm, the better our system functions. It’s a collaboration.”

One of the challenges for increasing participation in pollinator conservation in Montana involves large-scale agriculture. Wheat, Montana’s premiere crop, is wind-pollinated and doesn’t require the services of bees. Alfalfa seed is another major crop for the state, and while native bees visit alfalfa and contribute to the pollination effort, their numbers are limited, “and when you have a single crop on a very large scale, you need a bee that’s in abundance,” says Delphia. To reach that needed scale, landowners in Montana utilize the non-native alfalfa leaf-cutting bee, which is raised commercially.

What kind of incentive would it take for a landowner to set aside even a small portion of valuable cropland for pollinator habitat? Delphia and her MSU colleagues, Drs. Laura Burkle and Kevin O’Neill, are exploring the potential for developing a market for native wildflower seeds. An entrepreneur could plant pollinator strips for habitat, then harvest and sell the seeds. While there isn’t enough demand at this time, agency professionals and conservation advocates continue to explore new ways to incentivize habitat development.

Between 2013 and 2015, an MSU graduate student sampled native bees in the epicenter of a large wheat-growing region. Delphia thought he might collect a few species at best. Instead, the student identified 109 species, all of them “eeking out a living” in the middle of wheat country. Thinking about it today, the surprising results give Delphia cause for optimism, but also point out the tenuous state of affairs for pollinators in Montana and elsewhere, and the need for continued action.

“Maybe what that shows us is there are bee species more resilient than we think, and we still have an opportunity to get out there and give them more habitat before we see more serious declines. There’s

still the chance to save what's present. If we can expand or restore more habitat, it'll make me more hopeful."

#####